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# Agricultural marketing

APRIL 1960



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The Maid of Cotton page 8

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April 1960

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## Cover page

High-fashion and farsighted research are combined in the 46-piece wardrobe of Sandra Lee Jennings, 1960 Maid of Cotton. Miss Jennings' striking and practical outfits, scheduled for fashion showings both here and abroad, reflect the interest of USDA's Agricultural Marketing Service in helping American agriculture promote its products. More of this story on page 8.

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Manufacturers' Opinions of

# Cotton and Leather

## USED IN SHOES

by Daniel B. Levine and Harold R. Linstrom

**A**GRICULTURAL Marketing Service researchers expect both cotton and leather to continue to play a large role in the manufacture of shoes. But they also expect both products to face stiff competition from rubber and synthetics.

Shoe and slipper production between 1948 and 1958 increased from 480 million to 582 million pairs—but without a comparable increase in the industry's use of cotton. Instead, nylon threads, nylon and silk mesh toppings and inserts, and plastics have been used in increasing amounts.

Also, a good many shoes are now made without linings and without laces. And this trend has influenced the market for cotton. Fewer linings and laces mean smaller cotton requirements.

Similar problems confront the leather industry. Synthetics and other materials have cut into the market for both soles and uppers. The use of rubber and composition soles doubled between 1947 and 1958, while leather soles dropped from 73 to 32 percent of total production. Use of leather uppers declined from 90 to 85 percent.

Mr. Linstrom is a staff member of the Market Development Research Division, AMS. At the time of the study, Mr. Levine was also a member of the Division but has since left the Department.

In a survey of the industry's use of materials, including cotton and leather, AMS researchers asked manufacturers to pinpoint what they liked and disliked about these two agricultural products.

Executives in 81 shoe companies in 57 cities in 14 States were interviewed in person. Their answers provide information to the cotton and leather industries which will be helpful in maintaining or expanding their markets. The data also can indicate to the shoe industry future trends in shoe construction and materials usage.

Cost is, of course, the chief consideration in selecting any material. But in the shoe industry, it is far from the only one.

Take leather, for example. Although about 10 percent of the industry complained about the high cost of leather, almost all agreed that "leather is *the* material for shoe uppers."

It makes into a comfortable, good looking, durable shoe. And this pleases the customers.

But, manufacturers find leather "lacks uniformity." Highly skilled and experienced cutters are needed, and since certain areas of the hides are unsuitable, there's quite a bit of scrap.

The quality-shoe manufacturer

usually is more able to absorb these added costs. But some of those in the low-price field are not.

Perhaps this is one reason for the trend toward lighter, more casual shoes. Cotton uppers offer style variations and are less costly. They are washable, comfortable, and cool.

But when cotton is mentioned in the shoe industry, it's not as uppers. Linings comprise the big market for cotton. Nearly two-thirds of all shoes produced in 1958 had vamp or forepart linings made of cotton.

Manufacturers like it because it is inexpensive and easy to work with. It also makes shoes comfortable, absorbs perspiration, doesn't crack or get hard.

Cotton's performance is predictable. Manufacturers "know what to expect from it." This may give cotton an edge over new and relatively untried synthetics.

While leather liners are the choice of 4 out of 10 manufacturers, these men still consider leather rather expensive for this use. It is most frequently used for liners by high-style companies who produce "quality" shoes. As one executive explained, "Women look for leather liners, so we use them"—despite their added cost.

Besides liners and uppers, leather

(continued on page 16)



# THE CROP

(Condensed from *The Sacramento Bee*)



Against a backdrop of grain elevators, crop statistician gets information on supplies from grain company official.

**C**ROP SIZE, through its direct and dramatic effect on prices, is so influential in the lives of everyone who sells or buys farm products—including millions of consumers who see the crop only in package form—that measuring, analyzing, and predicting it well may be the most important governmental activity in agriculture.

In this line, as in a number of others, California has the biggest.

"We need it," explains W. Ward Henderson, Chief of the State department of agriculture's Crop Livestock Reporting Service which keeps its fingers on the pulses of about 100 crops.

California, Henderson points out, must issue more numerous—over 400 yearly—and more detailed reports than other States because of its multiplicity of crops and growing conditions.

Government crop reporting, which in this Nation is considerably older than either the United States Department of Agriculture or the State of California, still operates successfully on its original theory—that a farmer's opinion about the status of crops in his area probably is as close as you can come to the elusive truth.

Accordingly, on the 23rd of each month, the Crop Reporting Service mails questionnaires to about 4,000 farmers in the State. These volunteers report their estimates of field and fruit crops in their districts.

Meanwhile, other reports are coming in from hatcheries, feedlots, grain warehouses and other producers and handlers whose inventories or purchases, when totaled, give significant information about the status of a crop before or after marketing.

This stream of statistics flows

Information for the crop and livestock reports comes from those in the business. Here, AMS statistician talks cattle numbers with the operator of a feedlot; another reporter visits former in milo field.





# REPORTING SERVICE

## HECKS GRASSROOTS OPINION

into the State office where it is tabulated, analyzed and, if necessary, interpreted in the light of experience.

Then, still unofficial, it goes to the USDA's crop reporting board which again applies the analytical process. Finally, at 3 p.m. on the 10th of the month for most crops, the official estimate is made public in Washington. Within a few hours, the State Crop Reporting Service releases its similar, but often more detailed, report.

Many of the reports are concerned only with the past. Acreage, yield and total production of crops; inventory numbers of livestock; price, total value and final market destination—all are covered in the crop summaries.

But predictions of future crops are the heart of the crop reporting program. These estimates—strictly on production, not price—are issued regularly as each crop develops. Rice production forecasts, for instance, come out monthly from July through November.

Since all this depends largely on the aforementioned estimates, there have been mistakes. And, naturally, yearnings among farmers and crop reporters alike for a more foolproof system.

Present methods are surprisingly accurate for most crops most of the time. But the tendency, as shown in some fruit and nut crops during the past year or two, is to overestimate very small crops and to underestimate very large ones especially at the beginning of the season.

And there are other pitfalls for even the wariest crop estimators. Last summer, for instance, the cling peach crop fell short of the early forecasts, to the embarrass-

ment of the growers who were attempting to fit their marketing to total supply. Why? In addition to large tonnage, and possibly because of it, the crop simply did not size as fast as expected—a simple explanation, but one which was a good deal more obvious afterward than before.

In conjunction with the University of California's Giannini Foundation, the crop reporting specialists are seeking measurable factors which can refine their system of estimates. Now concentrating on peaches, walnuts, lemons, and grapes, the researchers report some progress.

"We have the mathematical know how to forecast accurately total production from a small sample, when the crop is mature," says Joseph Mullin, Assistant Chief of

the California Crop Reporting Service. "Now we are working on the variables which can change the outlook between the time when the young fruit sets and when it matures."

Obviously, accurate predictions early in the season are the ones which pay off most.

By applying statistical procedures to such factors as the number and size of young peaches on a tree or bunches on a grapevine, the crop reporters hope to outdo the political poll takers at their own game of scientific sampling.

But this procedure and the experienced eye of the farmer will supplement each other. You cannot entirely replace a traditional fine art with a calculating machine.

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This article is reprinted with the permission of the *Sacramento Bee*.

Working on research project to forecast grape production objectively, AMS agricultural statistician counts bunches of grapes on a particular vine.





# Acreage Marketing Guides for VEGETABLE GROWERS

by Donald S. Kuryloski

**P**RODUCTION tailored to fit market demands—that's the aim of all farmers and especially those who produce vegetables.

Truck farmers raise a highly perishable crop that often requires marketing almost the minute it reaches maturity. If their production and marketing pattern isn't just right, they stand to lose money.

That's why it's especially important for these growers to plan their operations well in advance—before they've made any investment in seeds, fertilizers, or labor.

To provide background information as well as a key to the coming season's marketing prospects, the Agricultural Marketing Service publishes (three times a year) guidelines for commercial vegetable production. These publications, known as Acreage-Marketing Guides, recommend acreages for each vegetable crop in each production area.

Planting recommendations represent the best possible estimates of

skilled economists and marketing specialists. They take into consideration all of the various factors that affect supply and demand.

AMS personnel analyze the ups and downs of the market, check market opportunities, interpret the past seasons and their meaning for the coming one. They also allow for variations in weather, in yields per acre, and in the timing of the harvests.

The guides for this summer's tomato crop illustrate how the program works. For the early summer crop, growers are advised to plant the same number of acres as they did last year.

In 1959, growers ran into trouble even after they cut acreage 3 percent, because exceptionally high yields-per-acre produced the biggest crop on record. This year, with more normal conditions, the same acreage should give a crop about 9 percent smaller—which will be about right to satisfy the market.

Late-summer tomato production last year was too small, so the recommendation is for a 5 percent increase.

Potatoes are another important vegetable crop, and balancing supplies with market requirements is especially important. It doesn't take very much overproduction to drive potato prices 'way down.

The guide for this year's fall spud crop calls for a 7 percent acreage cut. This may seem strange at first glance, since last season's crop was marketed at good prices with no real problems. But last year's market got all the breaks, according to the men who draft the guides.

Timing of the harvests in the various areas was just about perfect, with no overlapping of seasonal supplies. Whenever over supplies threatened, rain stopped the harvest in key areas and prices firmed up again. Finally, Canada produced a small crop which reduced our competition.

This is too much to count on again, say the experts. They believe prospects for a good market will be a lot better with some cut in production. The 7 percent reduction they're recommending should produce a fall potato crop about 2 percent smaller than last year's.

The recommendations for each crop, along with the reasons behind them, are summarized in the 1960 Acreage-Marketing Guides booklets, available through local Extension Service offices and the U.S. Department of Agriculture. They'll help any vegetable grower do a better job of tailoring his crop to market requirements.

The author is an agricultural economist in the Fruit and Vegetable Division of AMS.

Whatever the vegetable, wherever it's grown, farmers can find valuable planting information in the Acreage-Marketing Guides published three times a year by AMS.







## New DISPLAY TRAY for Retail Meat Counter

by Marvin D. Volz

**A** NEW SYSTEM of displaying meat in adjustable metal trays has been developed and is being tested by market researchers in the U. S. Department of Agriculture.

Tried for the first time last November in a large supermarket, the tray system promises savings in time, labor, and money—not only for the retailer but for the consumer as well.

The trays that hold the meat in the new display system telescope to fit items of various sizes. They come in two widths—one that adjusts from 4½ to 7½ inches and another that holds packages from 7½ to 12½ inches.

Packaged meats are priced at the scale, positioned envelope-fashion in the trays, and the whole unit placed in the display case.

The overlapping envelope display allows the customer to quickly thumb through the packages and

select the item she desires. As each package is removed, the others reposition themselves in the case, and the tray appears full at all times.

When it is necessary to restock, the empty or near empty tray is removed and set aside. Another is inserted.

Packages from the removed unit may then be placed on top of the new display to assure 100 percent rotation of merchandise.

AMS marketing researchers report that in preliminary tests the new tray-pack method increased labor productivity in displaying red meats 80 percent over the conventional method. For delicatessen items, the increase was 118 percent.

Initial tests also indicated that the tray displays require little maintenance because—

- The trays always remain straight in the display counter.
- The tray, adjusted to the width of the packages, keeps the meat neatly aligned.
- Customers need not remove the

packages from the tray in order to check quality and price. (If they do take a package out and then decide not to buy it, they usually return it neatly to the same tray.)

Display space is also reduced when trays are used. And, because the product is handled less frequently, tray-displayed meat suffers less handling damage than meat placed directly in the counter.

Possible disadvantages of the tray method of handling are the higher cost of the trays and the lack of uniformity in display cases. As yet, neither of these factors has been adequately evaluated.

AMS researchers, however, plan to conduct further tests to find out how well tray units will work when used throughout an entire meat department. These should show the overall advantages—and disadvantages—of the tray display system and give analysts an accurate measure of savings in space, time, and money. Besides aiding the retailer, these savings will also benefit the farmer and the consumer.

The author is an industrial engineer in the Transportation and Facilities Research Division, Agricultural Marketing Service.



AMS research is constantly seeking new, more accurate ways to measure spinning and weaving performance.



# the maid of color spotlights marketing RESEARCH

Sandra Lee Jennings' fashion  
USDA's marketing research  
helping American agricultu



late ginning machinery can help hold costs, AMS research indicates.



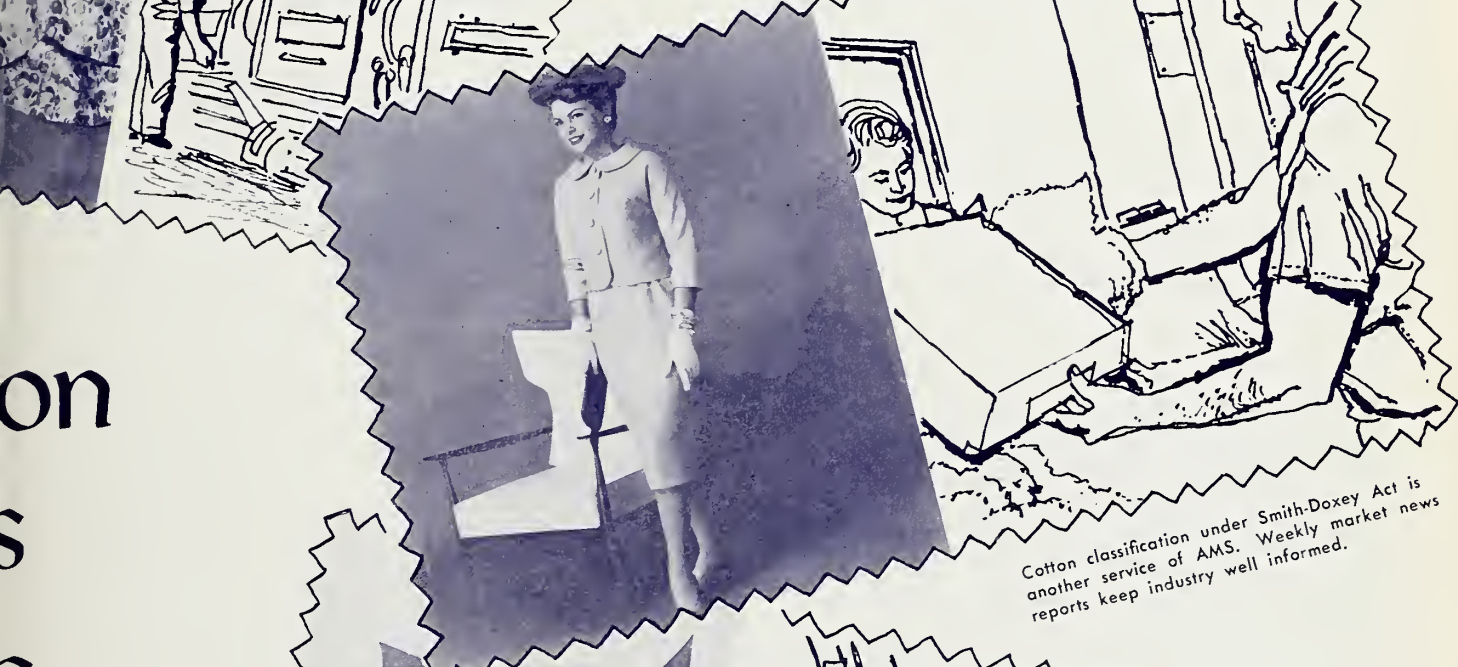
AMS consumer preference studies show what people want and expect in cotton wearing apparel.

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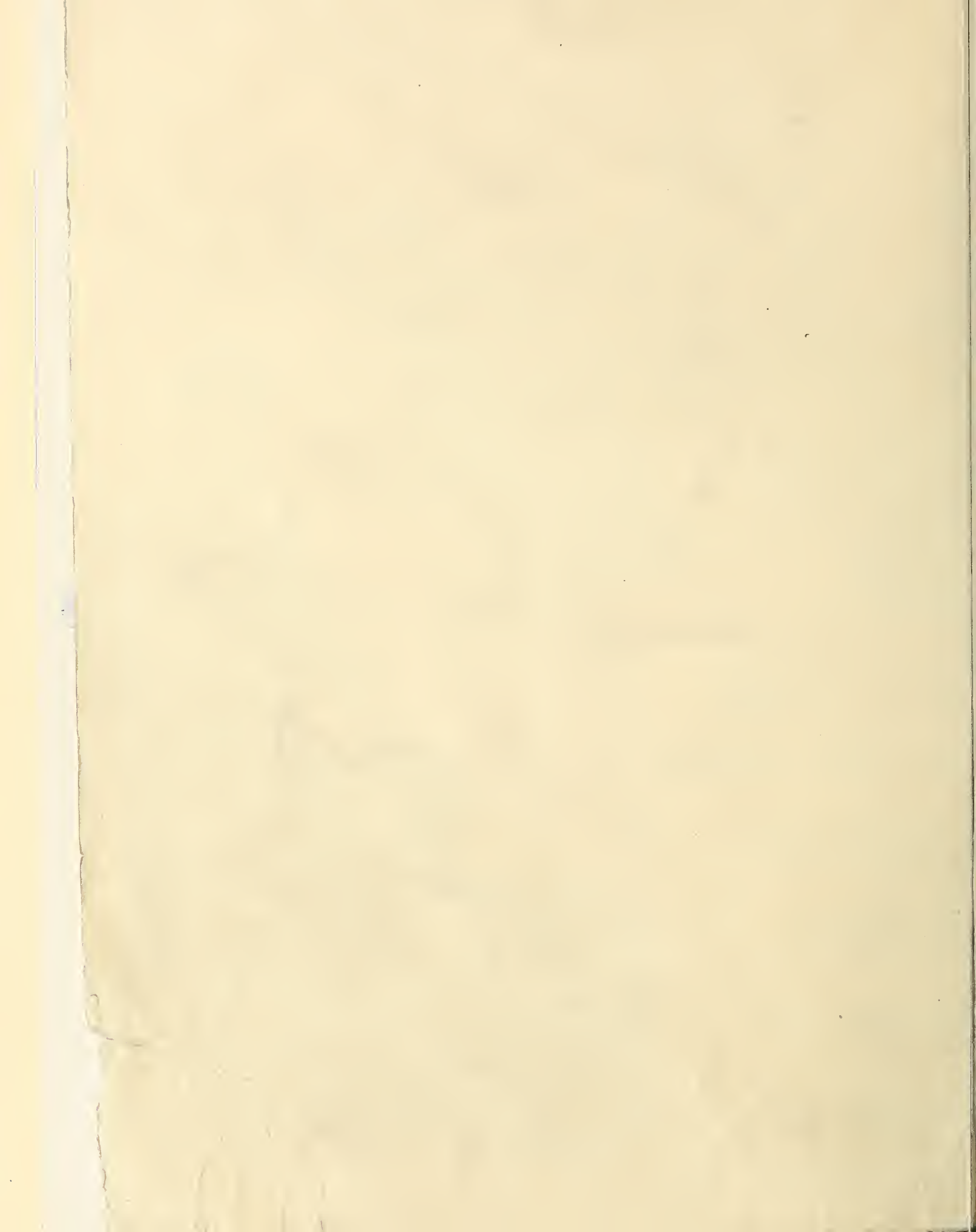
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Cotton classification under Smith-Doxey Act is another service of AMS. Weekly market news reports keep industry well informed.



Handling and facilities experts point way to greater efficiency through use of modern buildings, equipment.





AMS research is constantly seeking new, more accurate ways to measure spinning and weaving performance.

Up-to-date ginning machinery can help hold ginning costs, AMS research indicates.

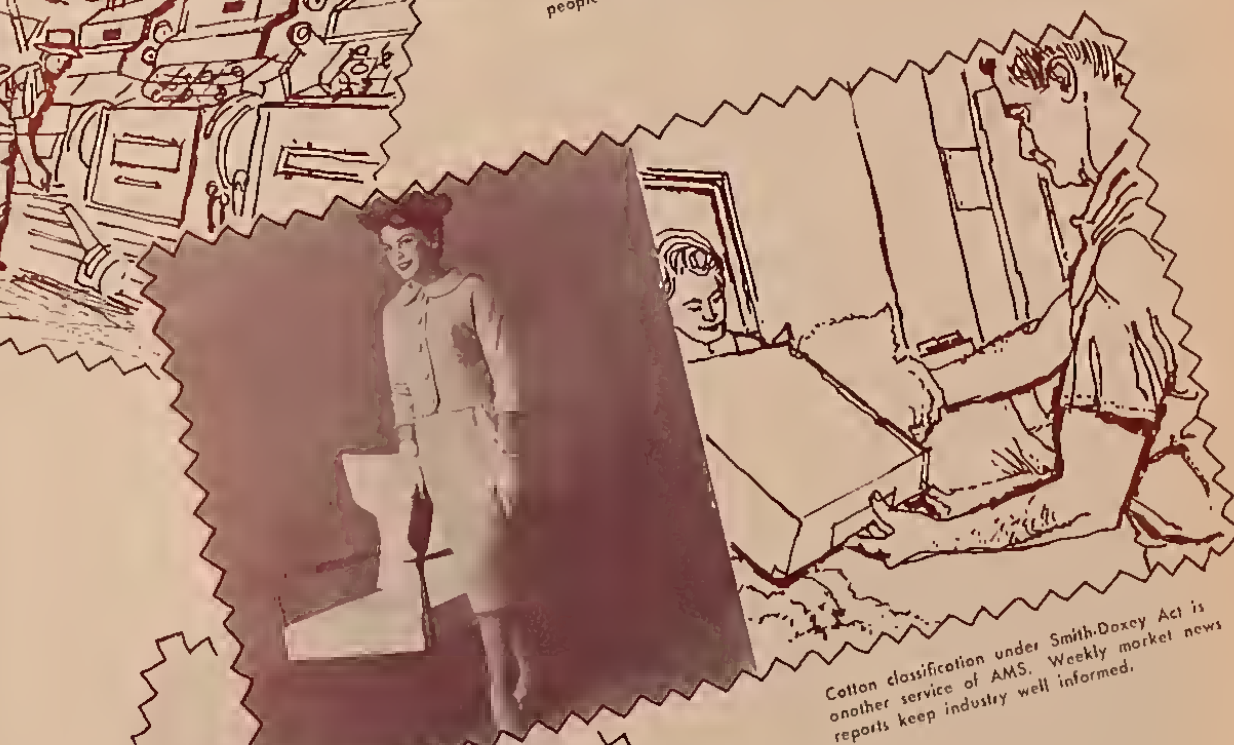
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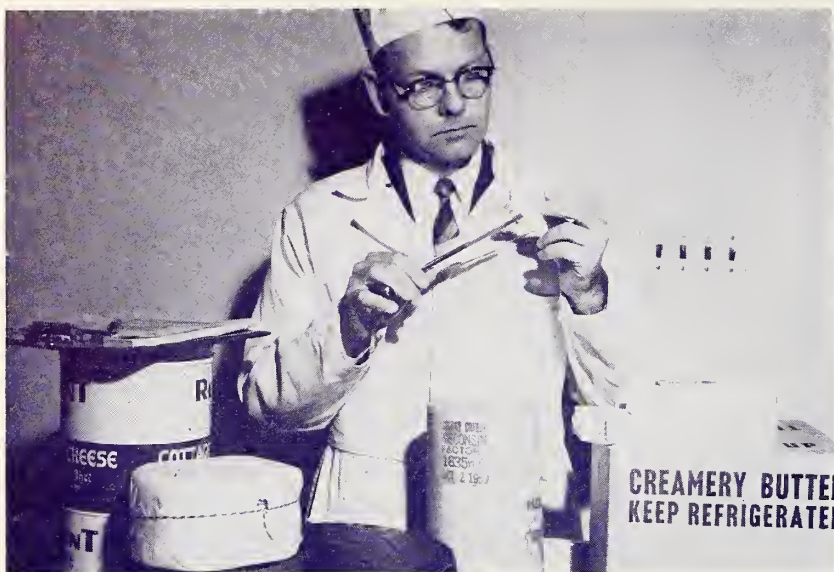
Handling and facilities experts point way to greater efficiency through use of modern buildings, equipment.

# the maid of cotton spotlights marketing RESEARCH

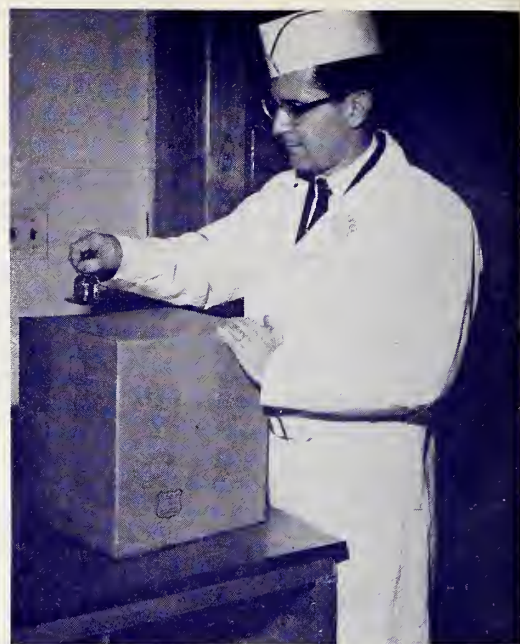
Sandra Lee Jennings' fashion wings reflect USDA's marketing research program for helping American agriculture and its markets







Dairy products grader checks a plug of cheese to see if it meets specifications on purchase order. At right, grader stamps sealed carton to show contents have met the contract terms.



## DAIRY INSPECTION SERVICE FOR QUANTITY BUYERS

by Harold E. Meister

**B**UYERS for restaurants, hotels, hospitals, bakeries, steamship lines, and other institutions—both private and governmental—can be assured of getting dairy products of the quality they desire by utilizing the USDA dairy products inspection service for quantity buyers.

Available for some 40 years, this service is provided by the Dairy Division of the Agricultural Marketing Service. It is, each year, being employed by an increasing number of institutional buyers.

The service enables these purchasing agents to draw up specifications and award contracts—knowing that experienced, impartial Government graders will see to it that their contract terms will be properly met.

The service is operated on a fee basis with either the purveyor or purchaser assuming the nominal cost of inspection.

A wide variety of dairy products may be purchased on contract and

certified by the USDA inspection service. Products for which there are Government grade standards are usually purchased by grade. These include butter, natural cheese, and dried whole and nonfat milk and dried buttermilk. Graders will also certify as to the flavor, condition, weight, and degree of cure (cheese) when these are listed in the specifications.

Roquefort, Blue, Muenster, Cottage, and other natural cheeses, as well as all process cheeses, can be purchased on a "Satisfactory Quality" basis.

Other dairy products, such as ice cream mixes, evaporated milk, and malted milk, for which no U. S. grades exist, may be purchased on quality, condition, and packaging specifications and also checked for other specified factors.

In brief, here's how the dairy products inspection service for institutional buyers works:

The buyer writes up specifications for the items he wants to buy (including the U. S. grades desired, size, weight, packaging, and so forth) and states that delivery will

be subject to inspection by a USDA dairy products grader. If requested, graders will assist in developing specifications.

He may get competitive bids on the various items and award contracts to firms offering lowest bids.

The suppliers awarded contracts notify the nearest AMS Dairy Division area supervisor when delivery will be made.

A grader then checks the proposed delivery. If it meets contract specifications, he stamps each item or package with the appropriate official grade mark or stamp. If practical, the entire order is then sealed and the sealing tape stamped as well. The grader also stamps the bill of lading or shipping label to show that the order has been properly filled.

Next, the grader issues a certificate which states that he has examined the products listed for grade, condition, and weight at the time and place indicated. If any of the items offered do not meet contract specifications and the purveyor is unable to supply a product

(continued on page 16)

The author is Chief of the Inspection and Grading Branch, Dairy Division, AMS.



# Growers Lose Money on Mixed-Quality Cotton Bales

by R. C. Soxman

WHEN two different qualities of cotton are included in the same bale, the grower is apt to lose money and the cotton mill cannot be sure of the true quality of the cotton it is buying.

Unfortunately, mixed-quality cotton bales occur too often.

That's why researchers in the Agricultural Marketing Service recently took a hard look at the problem. They wanted to find some way to at least partially solve it.

Basically, the problem is this:

When cotton is sampled for grading, a small amount of lint is taken from each side of the bale, and both parts are classed. If the quality is different on the two sides, the farmer is paid on the basis of the lower quality—even though most of the bale may be higher.

During one season of the AMS study, farmers lost an estimated \$2,400,000 of income because of mixed quality bales.

Cotton shippers also lost money. They had to pay warehousemen extra dollars for special handling of the mixed bales. Some warehouses reopened the bales, re-sampled, and rebaled them with the low-quality lint removed. In many instances, the benefits were not enough to repay the costs.

Most frequently it's the ginners who are blamed for mixed bales because they often combine cotton from two different farms. A less prevalent belief is that growers bring mixed loads of cotton to gins.

The AMS study showed that both of these causes are at work. But most often it's the farmer who is responsible.

Actually, about 61 percent of the mixed-quality bales included in a special study was brought to the gins as mixed seed cotton. Only 39 percent was mixed at the gins.

Needless to say, the problem of mixed-quality cotton will never be entirely eliminated. Farmers cannot always bring in a load with the same quality of cotton throughout. Weather causes certain quality differences, and cotton from two different fields may have to be combined to make up a load.

But certain precautions can be taken to ease the situation. (1) Farmers can be more careful to reduce mixing cotton of differing

qualities. (2) Ginners, in starting a new bale, can see to it that their presses are not turned before all the cotton from one farmer's load has been baled.

Researchers for AMS believe that a coordinated education program, directed at both growers and ginners, could lead to a reduction in the number of mixed-quality bales.

During the 1954-55 season, nearly half a million bales of cotton were estimated to be of mixed quality. About 70 percent of these came from Oklahoma, Texas, and Arkansas, where only 37 percent of the year's production was ginned. All other States had considerably less than the national average of mixed-quality bales. For the United States as a whole, only 3.4 percent of total ginnings were of mixed quality—but that's still a lot of cotton.

A detailed account of the AMS study which covered four marketing seasons may be found in "Mixed-Quality Cotton Bales," AMS-361. The publication may be obtained from the Marketing Information Division, Agricultural Marketing Service, U. S. Department of Agriculture.

Two samples are removed from bale. If quality is different, farmer is paid on basis of lower quality.



The author is an agricultural economist in the Marketing Economics Research Division of AMS.





Perched high atop shelling plant, new spout-type sampler is fully automatic, samples peanuts as they are unloaded from the farmer's truck.

## PEANUT GRADING EQUIPMENT

### a progress report

by Donald S. Matheson

**G**RADING farmers' stock peanuts has always been a tough, tedious process. The inspector has to draw a sample, divide it, clean it of foreign material, shell it, screen the kernels for size, and split open each kernel to examine it for defects.

The author is Assistant Chief of the Fresh Products Standardization and Inspection Branch, Fruit and Vegetable Division, AMS.

Until recently, each of these operations has been done by hand. Each took a lot of time, and the sample size had to be kept small. As a result, the grading has not been as accurate as desired.

The Federal-State Inspection Service, a cooperative service of the Fruit and Vegetable Division of AMS and the State departments of agriculture, is concerned most directly with the peanut grading

problem. It grades virtually the entire crop of farmers' stock peanuts—in recent years, more than 800,000 tons annually.

The Inspection Service, faced with the job of inspecting all these peanuts by hand, asked researchers in the Market Quality Research Division of AMS and in the States to help develop mechanized equipment that would replace the hand methods and permit the examina-



tion of larger samples of peanuts.

The peanut industry, through financial assistance and continuous encouragement, has helped to shorten the time between drawing board plans and practical pieces of equipment. In addition, the Commodity Stabilization Service of USDA has strongly supported this research, because large quantities of farmers' stock peanuts have been placed under price support loans in most years and accurate grading is essential to establish fair values for these lots.

Now the researchers have come up with a line of mechanized grading devices that will more than double the accuracy of the grading process and speed it up at the same time!

The new machines cover most steps in the grading process, eliminating much of the need for hand labor, and removing sources of human error that have lessened the accuracy of grading in the past. As a result, when the full line of new equipment is officially adopted, the size of the grade sample can be increased from 100 grams to 500 grams.

Research teams are developing two new types of bulk load samplers that promise more accurate samples of farmers' loads. A mechanical sheller and a kernel splitter take over jobs that used to be bottlenecks requiring hand labor. And the samples are divided and screened by mechanical devices that eliminate possible mistakes in human judgment.

The end result of all this? Well, on a practical level, farmers will be sure of getting an accurate determination of the grade and size composition of the peanuts they deliver. Shellers, too, will benefit because they will be certain of getting the quality they're paying for.

In short, the marketing system will operate with less risk and confusion and with greater satisfaction to all concerned.

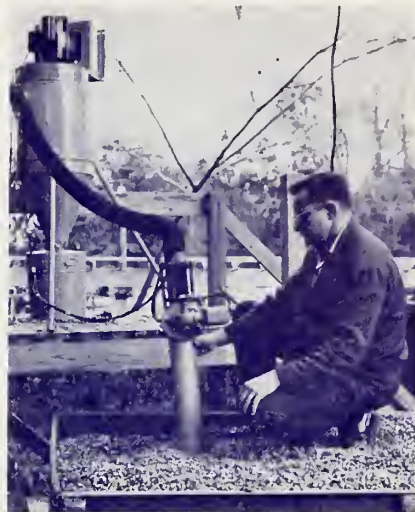
One of the researchers' prize ex-

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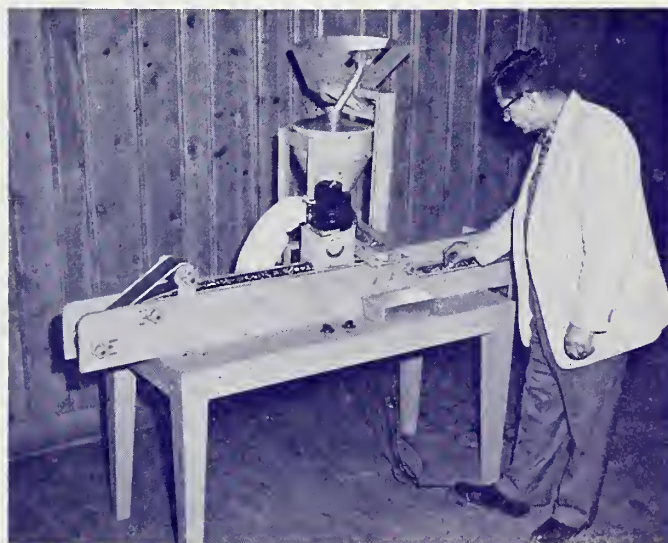


Newly developed dividing machine reduces the number of peanuts that actually have to be shelled, split, and then examined.

Suction-type sampling tube takes the work out of getting sample. Suction tube is more accurate than hand method, reaches bottom of load.



Mechanical sheller is 20 times as fast as hand method. It shells 500-gram sample in 3 minutes; hand shelling takes 12 minutes for 100 grams.



Ingenuous splitting device throws peanuts against inside of metal cylinder to split them. On conveyor, air blast turns peanuts face up for inspection. A second conveyor turns halves over so inspector can see the outer surface.



hibits is a spout-type sampler. Installed as permanent equipment in shelling plants, this sampler is fully automatic. It samples the peanuts as they are unloaded from the farmer's truck, and replaces the old method of sticking a hand scoop into the stream of peanuts being dumped into the sheller's bins.

These spout-type samplers already have been adopted for official use in grading peanuts. They were used for the first time last season in the Virginia-Carolina area.

To sample bulk loads of peanuts before they're unloaded, a suction-type sampler has been developed. Inspectors look at this machine with real joy, because it works its way down through the load automatically. The old sampling tube had to be pushed down by the strong back of the inspector.

The suction tube is more accurate, too, because it samples peanuts clear down to the bottom of the load. The hand tube, because of its construction, took its deepest samples about 3 inches from the

bottom of the load.

After the sample is taken, it's put through the sample divider. This reduces the number of peanuts that actually have to be shelled, split, and examined. No two men divide a sample in the same way so the sample divider was developed to eliminate the human error as well as some of the work.

The mechanical sheller is 20 times as fast as hand shelling. It will handle the proposed 500-gram sample in 3 minutes compared with at least 12 minutes to hand-shell the present 100-gram sample.

A presizer is used to separate the peanuts into different size groups for faster, better shelling. The sheller has three compartments, each with different sized shelling grates. Each presized portion of the sample is placed in its proper shelling compartment, and the machine delivers the kernels and hulls at separate outlets. It's operation is simple, efficient, and quick.

Screen sizing the kernels with

hand screens has always been subject to human variations—how hard, how far, and how long each man moves the screen. The mechanical screen shaker does the job accurately, fully as quickly, without any manual effort, and with a high degree of uniformity.

The splitter is another ingenious gadget. It throws the peanuts, one by one, against the inside of a metal cylinder so that the halves split apart along the seam. The halves drop onto a wire screen conveyor where an air blast turns them face up for inspection. A second conveyor turns the halves over so the inspector can see the outer surface without having to touch the peanuts. This device will split peanuts five times as fast as a man can do it by hand.

All together, these machines mean a big improvement in grading of farmers' stock peanuts—faster, more accurate, fairer to both growers and shellers. Research and cooperation have produced the tools to put peanut grading on a modern footing.

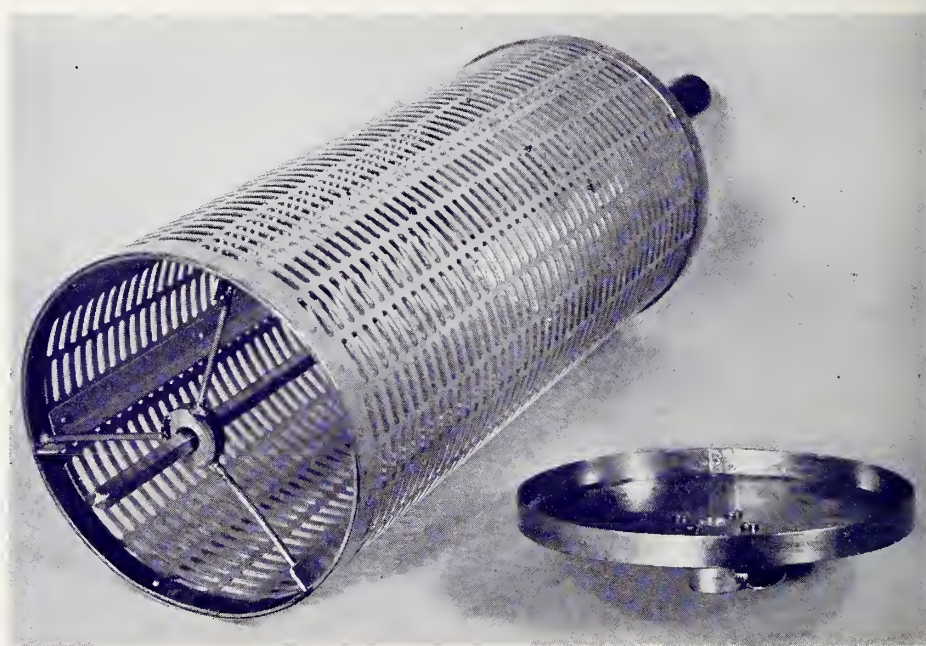
## Roasting Peanuts at Home

**N**EARLY everyone enjoys freshly roasted peanuts. But few have a means of roasting them at home.

A newly developed gadget, produced in the laboratories of the Agricultural Marketing Service at Beltsville, Md., may be just what folks are looking for.

Simple and inexpensive, it's a cylinder that fits into an electric rotisserie oven. Peanuts—either shelled or in the shell—and popcorn, too, can be placed in the cylinder and roasted to perfection.

Designed originally as a research tool, the new roaster attachment—if produced commercially—could offer an expanded market for fresh peanuts.







## MARKETS FOR FATS AND OILS IN SYNTHETIC LUBRICANTS

by Frederick J. Poats

**S**YNTHETIC LUBRICANTS derived from castor oil and tallow are riding high and fast on a jet stream market, but not fast enough to keep up with the perpetual revolution in technology that characterizes both the aircraft industry and industrial chemicals.

In slightly more than a decade, turbo-prop and pure jet engines have come close to displacing piston power in the airlines. And this development, according to AMS researchers, has created a market for agricultural materials as lubricants.

These synthetic lubricants can withstand the 250° to 300° F. temperatures under which older lubricants break down. But now, even more powerful jets are ready to outstreak the capabilities of the tough, versatile oils that derive, by an expensive and complicated process of refining, from castor oil and tallow.

The expansion of the market for agricultural oils is just one more skirmish in the struggle for outlets that characterizes industrial chemicals. As the marketing researchers point out, a product that dominates the market one day may

find itself outperformed, outproduced, and outpriced by a substance that was only a theoretical possibility the day before.

The need for greater airpower during World War II and the consequent development of jet engines for military aircraft speeded the production of synthetic lubricants. Castor oil was chosen as the raw material because of available supply and processing facilities. Also, castor oil had the best capabilities of the then available material.

In 1957-58, castor oil was the basis of 95 percent of the supply of synthetic lubricants. But tallow is expected to take an increasing share of the market which totaled about 10 million pounds two years ago.

In the first place, getting a lubricant out of castor oil is a relatively high cost process, a fact that mattered little while castor oil was the only practical source of lubricants for turbine engines. Now, scientists have come up with a way to produce a similar—but cheaper—lubricant from tallow. Though the tallow-derived lubricant accounted for only about 3 percent of the market as recently as two years ago, it should equal a fourth of the supply by 1961 and over a third by 1965.

Meanwhile both these lubricants seem to have reached the present

limits of their market potential. A derivative of petroleum is ready to take over the military market again. Even without the renewed competition from petroleum, the present market for synthetic lubricants would not get much bigger.

Airlines are changing over to jets and turbo-props as fast as they can. By 1961 the domestic need for tallow and castor oil-derived lubricants should be about 26 million pounds. After that, according to the economists, the demand is likely to taper off or drop sharply because of the nature of turbine engines.

With fewer moving parts, a turbine uses about a twentieth the lubricant needed for a piston engine, and the turbines are far more powerful. In the days before jets, four piston engines were needed to carry passengers from one coast to the other, and it took about 10 hours. Today, the same number of jet engines can cover the same distance twice as fast with double the number of passengers.

Thus, a jet plane can do the job of about four piston engine planes. And, since the synthetic lubricants last longer than the older petroleum oils, one quart of synthetic lubricant can replace up to 80 quarts of the older piston engine oils.

Marketing researchers mark 1965

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OFFICIAL BUSINESS

## **Market Potentials for Fats and Oils**

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as the end of these agricultural lubricants for military aircraft and possibly commercial planes. If the newly developed petroleum oils prove to be cheaper, in addition to being better able to withstand the higher temperatures of military engines, they may well take over the civilian market, too.

However, firms marketing castor oil and tallow derived lubricants have other outlets to explore.

Automobiles and trucks now in use offer a small potential market for castor oil and tallow derived lubricants. Though they cost more than mineral oils in hydraulic and transmission fluids, they are cleaner running and don't wear out as fast as regular crankcase and transmission fluids. Since the synthetics would cut down on friction and lengthen the life of moving parts, they could be more economical in the long run. And, in a 50-50 blend with mineral oil, the castor oil and tallow products perform about as well as they do full strength; this combination might be cheap enough to compete with mineral oil.

The potential use of turbine engines in automobiles and trucks indicates another future market for castor oil and tallow products. Few in the industry agree on this future for turbines in cars.

Some of the optimists forecast a quarter million turbine powered sports cars on our highways by 1965, and others add an additional 4 million turbine passenger cars. The pessimists point out that turbines in cars, as in planes, would decrease the need for lubricants, so

the market, at best, would be a small one. The optimists counter with the possibility of using these agricultural lubricants in all automobiles by 1975, thereby using up as much as a half billion to a billion pounds of tallow a year.

And though the story of lubricants is complex, the moral is simple:

A supplier of synthetic lubricants and additives who limits his production plans to today's specifications and needs may be missing out on tomorrow's markets. To stay ahead of the game, research in marketing agricultural products must seek out—and find—new characteristics in farm products as well as new outlets for traditional crops.

A more detailed report, AMS-353, is available from USDA.

## **Dairy Inspection Service**

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which does, the grader indicates this omission on the bill of lading or the invoice.

When the order is delivered to the purchaser, he needs only to check the accompanying papers to see if all items have been supplied. He should also check the order to make sure that all products have been individually stamped and are in sealed stamped cartons.

A leaflet explaining the dairy products inspection service for quantity buyers and listing the Dairy Division's area offices is available from USDA. Ask for AMS-366.

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## **Cotton and Leather in Shoes**

*(continued from page 3)*

also is a popular material for outer soles. Nearly 30 percent of the manufacturers prefer leather for soles.

Interestingly enough, large companies are three to one in favor of leather soles. They find leather meets the three basic requirements for sales. It is durable, comfortable, and attractive.

Yet even leather's staunchest backers again find its cost a major disadvantage. Many manufacturers also point out that it's hard to handle and has too much waste.

In other parts of the shoe, cotton continues to offer definite cost advantages. For example, it has maintained its hold on the thread market despite strong competition from nylon.

While nylon thread may be stronger than cotton, it also costs considerably more. So, nylon is generally used at stress points while other parts of the shoe are stitched with cotton thread.

The shoe lace market, likewise, belongs almost exclusively to cotton. About 80 percent of all lace-style shoes come with cotton laces. Men's and boys' shoes provide the largest market for laces; women's shoes account for the smallest.

For a complete report of the AMS study of the shoe industry, see "Manufacturers' Opinions of Cotton and Leather Used in Shoes." This study is part of a broad program of marketing research aimed at expanding markets for farm products. Single copies may be obtained without charge from the Office of Information, U. S. Department of Agriculture.